**Template | Unit Enhancement**

***EXPLANATION & ARGUMENTATION***

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**Background Information**

**Instructional Materials Title:** Sound

**Publication Date:** 1997

**Work Group Participants:** Cathy Alward, Dan Barkley, Chris Paul, Martha May, Anela Deisler

**Date Developed:** 8/22/13

**High Leverage Lesson (Title and Page Number):** Lesson 1 + 2

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**Rationale**

· **Why we identified this particular lesson** This lesson provides an opportunity for students to combine multiple experiences with how sound travels and explain their thinking.

**- Connections to NGSS Practices and WA Science Standards:** 4-5 PS 3D, 1PS4-1, 1PS4-2. Science explanation goals: make a claim. Use evidence to construct an explanation.

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***Explanation* Lesson Enhancement**

**Overview**

· **Identification of where within the High Leverage Lesson to insert enhancement**

· **Key instructional strategies and tools needed**

**Part 1: Lesson Modifications to Lead Up to *Explanation* Experience**

Students explore tuning forks, go on a sound walk, and complete the investigation of how sound travels through solids. In addition you will add an experience with how sound travels through water. Students will build their understanding of how sound travels and write a claim to make connections and meaning.

It is important for students to record observations on the sound walk, during the investigation, and in their research of how sound travels through water.

**Part 2: *Explanation* Learning Sequence**

*\* Begin after students gather data about sound they hear on their sound walk and in the investigation of how sound travels through solids*

Explore how sound travels though water

1. Discuss that sound can travel under water. Possible examples: in the bathtub, in a pool, animals in the ocean.
2. Show a video of a whale making sound underwater: Discover of Sound in the Ocean <http://www.dosits.org/>
3. Clicker: Use a clicker or small percussion sound device and make clicks travel through gas, solids, and water.
   1. Gas: click in classroom
   2. Solid: click in hall/outside classroom with door shut (sound travels through wall/door)
   3. Water: click in a container of water
4. Students write notes of their observations in their science notebooks.

Making Connections

1. Students fill out the How Sound Travels charts (found in the Instructional Guide). Students need to record examples of how sound travels through each type of matter (gas, water, and solids) from their observations and experiences. This needs to include the three examples of solids (foil, fishing line, meter stick). *\*You will need to prepare this page to be glued in science journal.*

**Part 3-A: Describe Assessment Task**

*Include the* ***question****,* ***evidence*** *students will use, and* ***scientific concepts*** *students will use in their reasoning.*

Guiding the Initial Explanation Writing Process

1. Shared Writing: Write a complete explanation with the class.
   1. Sample explanation: *Sound travels through matter. I heard a basketball bounce on the playground. I also heard a pencil fall in the hallway. This shows that sound can travel through air, which is a gas. I heard sound travel through a meter stick, foil, and fishing line. This shows that sound can travel through solids. Finally, I heard a whale make sounds underwater. I also heard my teacher make a clicking sound in a bowl of water. This shows that sound travels through water. My evidence shows that sound can travel through gases, solids, and liquids, which are forms of matter.*
2. Students then write independently in their journals. Give students who need it a frame to guide their explanation writing. (see below)

Frame

**Question**: Does sound travel through matter?

**Evidence:** Students will refer the How Sound Travels charts to provide evidence of sound travelling through different forms of matter.

**Science Concepts:** Sound travels through all forms of matter.

**Explanation concepts:** Make a claim. Use evidence to construct an explanation.

**Part 3-B: Assessment Rubric**

|  |  |  |
| --- | --- | --- |
| Points | Claim | Evidence |
| 0 | Does not make a claim, or makes an inaccurate claim such as, “it doesn’t make sound”. | Does not provide evidence, or only provides inappropriate or vague evidence such as, “The data shows me it’s true”, “Our data table shows the evidence.” |
| 1 | Makes an accurate, but vague claim such as , “Yes” | Provides only evidence from one form of matter:  May also include inappropriate evidence. |
| 2 | Makes an accurate and complete claim such as, “Sound travels through matter” | Provides evidence from only two forms of matter.  May also include inappropriate evidence. |
| 3 |  | Shows at least one piece of evidence from three forms of matter.  May also include inappropriate evidence. |
| 4 |  | Provides multiple pieces of evidence from all forms matter:  All evidence is appropriate. |

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**Additional Information**

NOTES

· Information that will be useful when teaching this lesson

- Resources that will be useful

- Scaffolds that students will use

**Explanation**

Does Sound Travel Through Matter?

**Claim**

Answer the question.

**Evidence**

Gas:

I heard \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Solid:

I heard \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Water:

I heard \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Reasoning**

Based on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_,

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